

Kundrat. Briefly these are tumor formation starting in a group of lymph nodes and spreading thence to neighboring nodes or follicles, with no general lymphoid involvement as in leukemia or pseudo-leukemia. True metastases by way of the blood stream are rare and usually isolated. The commonest sites of origin are the lymph nodes of the neck, mediastinum, mesenteric and retroperitoneal regions, less frequently the inguinal and axillary nodes. The affected groups form nodular, uneven masses, well limited in the beginning but later diffusely permeating the surroundings. The spleen and bone marrow are rarely attacked. Histologically the tumor is characterized by an irregular reticular framework with lymphoid cells in the meshes. The cells resemble lymphocytes but are larger and have a more lightly staining nucleus and a scanty, often almost invisible non-granular cytoplasm. There is no definite alteration of the blood picture. The other two cases not falling in this category, resembling each other in pathological anatomy and histological picture, are atypical lymphosarcomata. The main points which distinguish them from true lymphosarcomata are the early involvement of the lymph nodes throughout the body in a manner not suggesting regional extension, the distinct nodular metastases in liver and spleen, the inability to grow out into the surrounding tissue and the different cell components. The neoplasm is not leukosarcoma in which the splenic enlargement is due to a diffuse infiltration of the whole spleen by the abnormal cells and not to the presence of distinct nodules. It is hardly necessary to point out that the histological picture of Hodgkin's disease alone is sufficiently characteristic to make it unnecessary to indicate other points of differentiation.

## HYGIENE AND PUBLIC HEALTH

UNDER THE CHARGE OF

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**Hog Cholera and Paratyphoid Fever. Studies on the Paratyphoid-enteritidis Group.**—KOHN and VALENTINE (*Jour. Med. Res.*, March, 1918, pp. 89-125) state that the tendency to variations, as well as the differences in avidity for carbohydrates, shown by otherwise similar types, has led to contradictory opinions as to the classifying significance of the cultural reactions of members of the paratyphoid-enteritidis group. By correlating the fermentative results, especially in relation to quantitative reductional differences, well-defined groups result, as shown in the tables presented. This grouping correlates

host origin and agglutinative differences. *Bacillus cholerae suis* and *Bacillus paratyphosus* "B" in this way are separable one from the other, and the *Bacillus cholerae suis* is therefore a distinct type, and most of the strains studied have been similar and constitute a definite subgroup. This indicates that *Bacillus paratyphosus* "B" is essentially a human pathogen and that paratyphoid fever due to this type is normally caused by the transfer of the bacillus from man to man, and that infected swine are not a source of contagion for this disease, either directly or indirectly, through the consumption of infected food.

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**Observations on Meningococcus Carriers and on the Bacteriology of Epidemic Meningitis.**—During the summer and fall of 1917 MATHERS and HERROLD (*Jour. Infec. Dis.*, June, 1918, No. 6, xxii, 523) made an extensive bacteriological study of epidemic meningitis in one of the large military camps. The meningococcus carriers in the infected organizations were identified and isolated. For the cultures plain blood-agar was found to be satisfactory and the material for culture was obtained from the nasopharynx by means of a simple uncovered wire swab. It was found that 3 to 6 per cent. of the men examined were meningococcus carriers. The majority of these carriers, however, were of the temporary type; only 1.2 per cent. of the total number of suspects examined proved to be chronic carriers. Chronic meningococcus carriers, as distinguished from the temporary type, often harbor great numbers of meningococci in the secretions of the nose and throat. The number of carriers was found to be high among those coming in contact with meningitis cases. In a study of the biological reactions of 150 strains of meningococci from different sources two large biological groups were differentiated by means of macroscopic agglutination tests using monovalent serums. The agglutination reactions were in most instances definite and specific, but a number of atypical and inagglutinable strains were met with in each group. The atypical strains, however, did not differ enough from the other members of the group to warrant different classification as determined by agglutination. The classification of the inagglutinable strains was accomplished by means of agglutination with monovalent serums prepared from these strains; these serums yielded specific reactions with organisms of one or the other main type. The biological type of meningococcus predominant in the camp epidemic was identical with the type prevailing among the chronic carriers, but different from the type of meningococcus, causing the majority of the sporadic cases of cerebrospinal fever in Chicago. Also the type of meningococcus found in the cases and in the corresponding immediate contacts was in every instance the same. These facts suggest there is a close relationship between cases of epidemic meningitis and meningococcus carriers.

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**The Value of the Wassermann Reaction.**—LARKIN, LEVY and FORDYCE (*Jour. Am. Med. Assn.*, June 1, 1918, No. 22, lxx, 1589) state that the term "Wassermann reaction" includes several methods of serological procedure. An accurate interpretation of each method is essential in arriving at a proper diagnosis. A positive reaction is the most constant symptom of syphilis. The value of the reaction in diagnosing undoubted syphilis is shown by the following facts: (1)

The reaction is positive in practically 100 per cent. of the cases of florid syphilis. (2) In active tertiary syphilis of the skin and bones the reaction is positive in about 94 per cent. of the cases. (3) In syphilis of the central nervous system cognizance must be taken of the reaction in both blood and spinal fluid; the blood is positive in 80 per cent. of the cases. (4) In a pathological study the Wassermann reaction (alcoholic antigen, warm fixation) was positive in 94 per cent. of cases of syphilitic aortitis. As a means of corroborating syphilitic infection the Wassermann test is at least 90 per cent. dependable, as shown in a series of positive reactions in which 90 per cent. could be accounted for by syphilitic changes in the aorta alone. The value of a negative reaction has been studied and its reliability confirmed by the negative reactions obtained in non-syphilitic affections of the skin. In a series of necropsies in which it was demonstrated pathologically that the aorta was free from syphilitic disease, negative reactions were obtained in 91 per cent.

**Presence of Tubercle Bacilli in the Feces of Cattle in Dairy Herds.**—WILLIAMS, SCOTT, ROBERTS and HOY (*Veterinary News*, April 28, 1917, No. 695, xlv) state that this research is a preliminary to testing the viability of the tubercle bacillus when excreted on pasture land in the feces of cows. Incidentally it revealed a means whereby milk may become infected with tubercle bacilli from dung. To test the excretion of bacilli, guinea-pigs were inoculated with an emulsion of the feces. In all samples of the feces of 179 cows were examined, but for various reasons some of these were excluded from the final results. After such exclusions it was found that virulent tubercle bacilli were present in the feces in 3 cows out of 158. It is possible that one of these infecting cows should also be excluded, as she had been operated upon for tuberculous glands in the neck twelve months before the sample of feces was taken and was again obviously unwell. If, then, this animal be also excluded there remain 2 apparently sound cows whose feces infected guinea-pigs with tuberculosis from among 157 which were examined. By other methods it is possible that other cows might have been found to excrete tubercle bacilli in their feces. Only one sample was taken from any animal, and the sample represented only a very small fraction of the total daily excrement. Moreover, only a fraction of the sample taken could be inoculated into guinea-pigs.

**Tuberculous Mastitis in the Cow, Its Pathogenesis and Morbid Anatomy and Histology.**—McFADYEAN (*Jour. Comp. Path. and Therap.*, March, 1917, Part I, xxx) discusses the three views representing the route of infection of the mammary gland, namely: (1) by way of the milk canals; (2) by the blood stream from a preëxisting focus; (3) by way of the lymphatics from some tuberculous lesion in the abdomen. Against the theory of embolic infection are certain features of mammary tuberculosis: (1) The disease, as a rule, begins in one quarter of the udder and not in all four quarters. (2) In the great majority of cases it is a hindquarter which is first attacked. (3) The disease generally appears to have begun at the upper part of a quarter. (4) As a rule the lesions do not appear to develop from separate discrete centers in the quarter first attacked. (5) In certain cases, which are by no means rare, the supramammary lymph glands are found to be visibly tuberculous

while the entire udder tissue appears to be normal. The lymphatic theory, on the contrary, affords a perfectly satisfactory explanation of the whole of these facts. Infection through the teat canal is possible but rare. Attention is called to the common error in supposing that tuberculous mastitis is a nodular disease and that consequently palpation of a suspected udder should be directed to the detection of firm nodules. The disease is diffuse and increased solidity and firmness, without the formation of actual tubercles, are the more constant characters of the lesions.

**The Four Essential Factors in the Production of Milk of Low Bacterial Content.**—AYERS, COOK and CLEMMER (*Bull. No. 642, U. S. Department of Agriculture*) point out that the production of milk of a high sanitary quality involves a knowledge of the influence of numerous factors. To deal intelligently, therefore, with the influence of these factors, they must be grouped so as to bring together those which are of importance in connection with some definite phase of production. With this thought in mind the following group of factors were selected as a means of clarifying the subject. (1) Factors concerned in the production of milk which is practically free from visible dirt and which has a low bacterial content. (2) Factors most directly concerned in the prevention of infection of milk with pathogenic organisms. (3) Factors of importance in connection with the health of cattle. (4) Factors concerned in providing and maintaining conditions suitable for the production of a food product, even though they may not directly effect the quality of the product. The paper considers only the factors in group one. The experiments were conducted in a small barn with four cows. The general plan of the work, which covered about one and a half years, was as follows: At first the barn and cows were as dirty as possible, then one factor of improvement at a time was introduced, in order to obtain a milk of low bacterial content. When the essential factors were determined their value was checked by repeating the experiments. Extensive information is given in the paper on the contamination of milk by unsterilized utensils and manure and also the growth of bacteria in milk held at different temperatures. The experiments showed that the unsterilized utensils were a much greater source of contamination than manure and dirt. It is pointed out, however, that manure and dirt should be kept out of milk not only from a stand-point of common decency but because it assists in producing milk of low bacterial content and reduces the possibility of infection by disease-producing organisms, such as that of bovine tuberculosis. The results of the experiments indicate that it is possible for the average dairyman on the average farm, without expensive barns and equipment, to produce milk (practically free from visible dirt) which when fresh has a low bacterial count. By the use of three simple factors, which named in order of importance are sterilized utensils, clean cows with clean udders and teats, and the small-top pail, it should be possible on the average farm to produce milk which corresponds closely to milk as it leaves the udder of the cow. With these three factors it was possible during a period of two months to produce milk in an ordinary barn, 65 samples of which, when fresh showed an average count of 2154 bacteria per cubic centimeter. The value of these three factors

was demonstrated under practical conditions on six farms. A fourth factor of holding milk as near 10° C. (50° F.) is also absolutely necessary and increases in importance with the age of the milk. In connection with the production of milk of low bacterial content it seems evident from the results that undue emphasis has been given to factors and methods of minor importance, while those which directly affect the bacterial content have not been sufficiently emphasized.

**Physiological Stimulation of the Choroid Plexus and Experimental Poliomyelitis.**—FLEXNER, AMOSS and EBERSON (*Jour. Exp. Med.*, June 1, 1918, No. 6, xxvii, 679) record experiments which serve, in the first place, to confirm those of Dixon and Halliburton on the stimulating effect of intravenous injections of extracts of choroid plexus in the secretion of cerebrospinal fluid and extend their observations to monkeys. They bring out also the variable effects of the virus of poliomyelitis, variations affected by the quality of the virus and also by the individual powers of resistance to infection possessed by individual monkeys. These factors of variation must be taken into account in performing and interpreting experiments on infection and particularly those on immunity and specific therapy in relation to poliomyelitis. In general it may be said that experimental infection by way of the blood is not easy to produce in monkeys unless some contributing factor, such as the existence of a coincident aseptic meningitis, operates at the same time. And yet two of their experiments show that when the strength of the virus is great the injection of relatively considerable quantities suffices to induce infection and paralysis, but not in all instances. The chief outcome of the experiments has been to determine the fact that when the intravenous inoculation of the virus does not in itself suffice to induce infection and paralysis the intravenous injection of extracts of the choroid plexus, which in themselves excite the secretory functions which preside over the formation of the cerebrospinal fluid, is powerless to modify this result. This fact would seem to be of interest and importance, since it has already been shown that very slight structural changes in the meningeal-choroidal complex suffice to make possible or certain infection under these circumstances. Apparently mere augmentation, from time to time, of the secretory functions of the choroid plexus, through intravenous injection of an extract of the choroid plexus and while the virus is still circulating, is insufficient to ensure passage of the virus from the blood into the nervous tissues, upon which infection depends. Neither does the augmentation exercise a restraining influence on the development of infection otherwise capable of taking place.

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